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10/577,365

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David Lind

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EXAMINER

ORURONGBE, OLATUNDE S

ART UNIT

PAPER NUMBER

1796

NOTIFICATION DATE

DELIVERY MODE

08/18/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents.admin@dowcorning.com

Office Action Summary

Application No.

10/577,365

Applicant(s)

LIND ET AL

Examiner

OLATUNDE S. OJURONGBE

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/03/2008 has been entered.

2. Claims 1-12 are pending in the application.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1-7** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "(ii) adding to the emulsion in (i) components for preparing an emulsion containing an organic polymer by free radical emulsion polymerization of one or more ethylenically unsaturated organic monomers". It is unclear what limitation the applicant tries to set because the underlined statement is vague. It is unclear how the components of (ii) are added to the emulsion by free radical polymerization.

Dependent claims 2-7 are rejected for the same reasons.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1-3 and 5-7** are rejected under 35 U.S.C. 102(b) as being anticipated by **Hilliard (US 3,898,300)** as evidenced by **Hyde et al (US 2,891,920)**.

Regarding **claims 1-3 and 5-6**, Hilliard teaches an emulsion polymerization method that comprises adding a monomeric composition to an aqueous emulsifier system. Hilliard further teaches that the aqueous emulsifier system contains emulsified polyorganosiloxane and that emulsified polyorganosiloxanes are known in the art, such as found in US 2,891,920; 3,294,725 and 3,360,491 (col.2, line 64-col.3, line 10).

Hilliard further teaches the polyorganosiloxane of the invention having endblocking units that are either $R^3SiO_{0.5}$ or hydroxyl groups or both (col.4, line 49-col.5, line 24).

Hilliard further teaches that the emulsified polyorganosiloxane of the invention is essentially a polydiorganosiloxane (col.4, lines 49-60). Hilliard further teaches the method of the invention comprising a free radical generating compound that includes peroxides and azo compounds (col.3, lines 18-31) and further teaches that the monomeric composition of the invention is a mixture of at least two vinylic monomeric species that includes styrene and methylmethacrylate (col.4, lines 25-49). Hilliard

further exemplifies preparing an emulsified polyorganosiloxane by adding unto an aqueous solution of dodecylbenzenesulfonic acid, a mixture containing polydimethylsiloxane cyclics. Cumene hydroperoxide and styrene were subsequently added to the emulsified polydiorganosiloxane, and the resulting emulsion heated at 65°C (see Example 5C, col. 11, line 44-col.12, line 51; col.10, line 50-col.11, line 20 and col.9, lines 40-59).

By teaching polysiloxanes having endblocking units that are either $R^3SiO_{0.5}$, or hydroxyl groups, or both, Hilliard inherently teaches a linear silicone polymer. Moreover, Hyde et al teaches the emulsion polymerization of cyclic organosiloxanes to generate hydroxyl-endblocked diorganosiloxane (see Hyde et al, col.1, lines 40-45 and examples 1-17). The statement "alloy and/or hybrid emulsion" of the instant claim is an inherent property of an emulsion that depends on the components and the method of making the emulsion, since the components and the method of making the emulsion of Hilliard are identical to those of the instant claim, then the emulsion of Hilliard exhibits the property the applicant claims.

Moreover, the examiner notes that the statement "preparing an emulsion containing a linear silicone polymerby emulsion polymerization in which (a) the ring of a cyclic siloxane oligomer is opened, in which (b) an hydroxyl endblocked siloxane is condensed.....(c) an hydrogen endblocked siloxane oligomer and a vinyl endblocked siloxane are reacted by hydrosilylation using a catalyst" is a product-by-process statement. It has been established that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the

product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

For claim 5 the statement "the resulting emulsion is an aqueous emulsion containing an immiscible mixture of linear silicone polymers and organic polymers" is an inherent property of an emulsion which depends on the components of the emulsion. Since the components of the emulsion of Hilliard are identical to those of the instant claim, then the inherent property the applicant claims is exhibited by the emulsion of Hilliard.

Regarding **claim 7**, Hilliard further teaches that the emulsified polyorganosiloxane of the invention has an average particle size of 1000 to 10,000 Angstroms. The emulsified polydiorganosiloxane of Example 5C has an average molecular weight of 64,200. A polydiorganosiloxane with an average molecular weight of 64,200 has a viscosity that meets the claim limitation. Concerning the average particle diameter of the silicone polymer particles, the 1000 to 10,000 Angstroms of Hilliard discloses the claimed subject matter with sufficient specificity to constitute an anticipation under the statute.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. **Claims 4, 7 and 8-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hilliard (US 3,898,300)** as evidenced by **Hyde et al (US 2,891,920)**.

Regarding **claim 4**, Hilliard teaches all the claim limitations as set forth above. Though Hilliard does not explicitly teach a method in which the components in (ii) are added to the emulsion in (i) simultaneously, the examiner notes that selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected

results. In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930); In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946).

11. In the event that the applicant disagrees with the 102 rejection of claim 7 above, the following 103 rejection is made.

Regarding **claim 7**, Hilliard further teaches that the emulsified polyorganosiloxane of the invention has an average particle size of 1000 to 10,000 Angstroms. The emulsified polydiorganosiloxane of Example 5C has an average molecular weight of 64,200. A polydiorganosiloxane with an average molecular weight of 64,200 has a viscosity that meets the claim limitation. Though Hilliard does not explicitly teach a method in which the silicone polymer in (i) contains silicone polymer particles having an average particle diameter of 30-500 nanometer of the instant claim, the examiner notes a considerable overlap in the 1000 to 10,000 Angstroms of Hilliard and the 30-500 nanometer of the instant claim. It has been established that in the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art a prima facie case of obviousness exists.

Regarding **claims 8-11**, Hilliard teaches an emulsion polymerization method that comprises adding a monomeric composition to an aqueous emulsifier system. Hilliard further teaches that the aqueous emulsifier system contains emulsified polyorganosiloxane and that emulsified polyorganosiloxanes are known in the art, such as found in US 2,,891,920; 3,294,725 and 3,360,491 (col.2, line 64-col.3, line 10).

Hilliard further teaches the polyorganosiloxane of the invention having endblocking units that are either $R^3SiO_{0.5}$ or hydroxyl groups or both (col.4, line 49-col.5, line 24).

Hilliard further teaches that the emulsified polyorganosiloxane of the invention is essentially a polydiorganosiloxane (col.4, lines 49-60). Hilliard further teaches the method of the invention comprising a free radical generating compound that includes peroxides and azo compounds (col.3, lines 18-31) and that the monomeric composition of the invention is a mixture of at least two vinylic monomeric species that include styrene and methylmethacrylate (col.4, lines 25-49). Hilliard further teaches various examples of the emulsion composition (styrenic copolymer composition) of the invention, including that of Example 5C.

Though Hilliard does not teach a method of making a silicone polymer and organic polymer containing alloy and/or hybrid emulsion composition comprising (i) and (ii) of the instant claim, motivated by the desire to generate an emulsion with optimal properties, it would have been obvious to one of ordinary skill in the art to have mixed two or more emulsion compositions (styrenic copolymer composition)-including the emulsion of Example 5C with any of the other exemplified emulsions- of Hilliard. Moreover, it has been established that it is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, the idea of combining them flows logically from their having been individually taught in the prior art.

Regarding **claim 12**, Hilliard further teaches that the emulsified polyorganosiloxane of the invention has an average particle size of 1000 to 10,000 Angstroms. The emulsified polydiorganosiloxane of Example 5C has an average molecular weight of 64,200. A polydiorganosiloxane with an average molecular weight of 64,200 has a viscosity that meets the claim limitation. Though Hilliard does not explicitly teach a method in which the silicone polymer in (i) contains silicone polymer particles having an average particle diameter of 30-500 nanometer of the instant claim, the examiner notes a considerable overlap in the 1000 to 10,000 Angstroms of Hilliard and the 30-500 nanometer of the

12. **Claims 8-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tamori et al (EP 1172412)** in view of **Gee (US 6,316,541)**.

Regarding **claim 8**, Tamori et al teaches a method of producing an aqueous dispersion [0061, line 1] which comprises

- mixing components (A) and (B) [0061, lines 1-2], wherein component (A) is represented by the general formula (1), specific examples of which include dialkoxysilanes [0016-0025] and component (B) is a radical polymerizable vinyl monomer [0010, line 3];
- Conducting radical polymerization [0061, lines 6-7].

Tamori further teaches that the aqueous dispersion of the invention may be blended with other emulsions [0150, lines 1-3].

Gee teaches a method for making polysiloxane emulsions using emulsion polymerization (col.1, lines 6-8) which

- involves the opening of cyclic siloxane rings (col.4, lines 40-41) using an acid or base in the presence of water (col.4, line 42);
- upon opening of the rings, polysiloxanes oligomers with terminal hydroxyl groups are formed; these polysiloxane oligomers react through condensation reaction (col.4, lines 42-47).

Gee further teaches that the composition of the invention is a stable, oil-free microemulsion (col.3, lines 52-54). Microemulsions are the most desired type of silicone emulsions due to their smaller particle size and higher stability (col.1, lines 37-39).

Since Tamori et al teaches that the aqueous dispersion of the invention may be blended with other emulsions, motivated by the desire to incorporate the higher stability property of the emulsion of Gee into the aqueous dispersion of Tamori et al, it would have been obvious to one of ordinary skill in the art to have blended the emulsion of Gee with the aqueous dispersion of Tamori et al.

Regarding **claims 9 and 11**, modified Tamori et al further teaches examples of component (B) of the invention to include methyl methacrylate [Tamori et al, 0041, line 1-0044, line 8].

Regarding **claim 10**, modified Tamori et al further teaches polydiorganocyclicsiloxanes useful in the invention (Gee, col.4, line 52- col.5, line 20) and methyl methacrylate, butyl

methacrylate, acrylic acid and 2-hydroxyethyl methacrylate as more preferred component (B) [Tamori et al, 0046].

Polydiorganocyclicsiloxanes are linear siloxanes which upon ring opening (Gee, col.4, lines 40-41) produce linear siloxanes that are free of T and Q units. The more preferred component (B) of modified Tamori et al are organic compounds free of silicone atoms.

Though modified Tamori et al does not explicitly teach that the resulting emulsion contains an immiscible mixture of linear silicone polymers and organic polymers, the examiner notes that the miscibility of a chemical composition with another chemical composition is an inherent property of the chemical composition, since the both emulsions of modified Tamori fall within the range of the emulsions of the instant claim, then the immiscible property the applicants claim are exhibited by the composition of modified Tamori et al.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Tamori et al (EP 1172412)** in view of **Gee (US 6,316,541)** in further view of **Hyde et al (US 2,891,920)**.

Regarding **claim 12**, modified Tamori et al teaches all the claim limitations as set forth above and further teaches the method in which the polymerization reaction can be stopped at the desired particle size of the siloxane (Gee, col.8, lines 60-62) and exemplifies a particle size of 82 nm (Gee, col.12, line 61). Modified Tamori et al further

teaches that the reaction is allowed to proceed until it became too viscous to stir (Gee, col.12, lines 54).

Modified Tamori et al does not teach the method in which the viscosity of the phase containing the silicone polymer is 2,000-10,000,000 centistokes (mm^2/s) of the instant claim.

Hyde et al teaches that the time of polymerization in an emulsion polymerization will vary depending upon the viscosity desired in the resulting siloxane (col.1, line 72- col.2, line 2). Motivated by the desire to generate an emulsion with an optimal property while minimizing the time of polymerization, thereby cutting cost, it would have been obvious to one of ordinary skill in the art to have ended the polymerization reaction of modified Tamori et al at any viscosity, including 2,000-10,000,000 centistokes (mm^2/s). It has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLATUNDE S. OJURONGBE whose telephone number is (571)270-3876. The examiner can normally be reached on Monday-Thursday, 7.15am-4.45pm, EST time, Alt Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571)272-1302. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.S.O.

/Randy Gulakowski/

Supervisory Patent Examiner, Art Unit 1796